

APPLICATION FOR
UNITED STATES LETTERS PATENT
SPECIFICATION

Inventor(s): Minoru KURIKI and Kiyoto NAGANUMA

Title of the Invention: MESSAGE PROCESSING DEVICE, MESSAGE
MANAGEMENT METHOD AND STORAGE MEDIUM
FOR STORING MESSAGE MANAGEMENT
PROGRAM

MESSAGE PROCESSING DEVICE, MESSAGE MANAGEMENT METHOD
AND STORAGE MEDIUM FOR STORING MESSAGE MANAGEMENT
PROGRAM

5 Background of the Invention

Field of the Invention

The present invention is related to a message
processing device, a message processing system, and
a message management method, for processing a message
10 transmitted from a terminal, and a storage medium in
which a message management program is stored.

Description of the Related Art

Recently, the following technology has been
15 easily realized. That is, an electronic mail can be
transmitted to an individual receiver by a mail system
such as a personal-computer communications system, a
UNIX system or the like, and the same mail can be
transmitted to a plurality of receivers.

There is a case where, when a plurality of
members cooperatively do business, a leader transmits
mails to the members to confirm whether or not the
members have completed the business, in order to
determine the business progress states of the members.

25 In such a case, each member of the group prepares a

Ins A²⁰

mail for reporting whether or not his or her business has been completed, and transmits this mail to the leader. The leader reads the mails from all the members, and determines whether or not the business
5 of each member has been completed. In such a case, the number of mails to be read increases as the number of members increases, and so the leader's job increases.

Sub A2 Further, in order that a member other than the leader determines the progress states of other
10 members, he or she should send mails to the other members to confirm their progress states similarly to the above-mentioned, and should receive their responses. Therefore, the process of transmitting and receiving mails between members becomes complicated.

Sub A3 The displaying of received mails as a list has been conventionally performed, but in this
15 conventional method, only a list is displayed.

Ins A4 ~~There are many cases in which, when a mail is transmitted, a sender wishes to know whether or not
20 the receiver confirms the contents of the mail. In a conventional electronic mail system, however, the sender can determine whether or not the receiver opened the mail but cannot determine whether or not the receiver actually confirms the contents of the
25 mail. In a personal computer communications system or~~

~~the like, when a receiver reads out a mail which has~~
been stored in a host computer, is informed to a
sender as considering that this mail has been opened.
According to this method, even if the terminal
5 provided on a receiving side automatically reads out
a mail from a host computer, this mail is handled as
opened. Therefore, a sender cannot determine whether
or not a receiver actually confirms the contents of
~~a mail~~

10 Conventionally, the processing flow of business
is transmitted by mail. However, a process of
displaying the list of mails including a formatted
message about business and that of a mail including
a non-formatted message to an individual receiver, on
15 a same display, thereby managing the mails, has not
yet been performed.

Summary of the Invention

20 An object of the present invention is to
determine the states of the receiver of a message.
Another object is to display the contents of a message
and the states of a receiver linked with each other,
on a terminal. Still another object is to make clear
whether or not the receiver of a message confirms the
25 contents of a message or whether or not he or she

completes the business related to this message. A further object is to display the formatted message related to a business processing and the non-formatted messages other than this formatted message together with a message type so that the received messages can be uniformly managed.

The present invention includes a preparation portion for preparing a receiver state list for displaying the states of receivers of messages whose destinations are a plurality of receivers, and a management portion for managing the information of the receiver state list, in a message processing device for processing messages transmitted from a plurality of terminals.

15 ~~For example, completion information which informs~~
Ins AS that a receiver of the message confirms the contents of the message or that the business related to the message is completed, is included in the receiver state list. Thus, the sender of a message or receivers thereof can determine whether or not all the members who received the messages have confirmed the messages or whether or not the businesses related to the messages have been completed, by looking at the receiver state list. Accordingly, the states of all
20
25 ~~the receivers can be obtained simultaneously.~~

By displaying the comments to the received message on the receiver state list, which is prepared by the receiver, it can be determined whether or not the message is accurately transmitted to a receiver, or whether a receiver approves or disapproves of the message.

Further, by displaying the contents of a message and the receiver state list linked with each other on a terminal, the sender of a message and all the receivers can grasp the contents of the message as well as the states of each receiver of the message, simultaneously.

Ins A6 > ~~A message management method of the present invention is to display the formatted message related to a business processing and the non-formatted message other than this business together with the message type as a receiver state list.~~

According to the present invention, the list of a formatted message such as a work flow and a non-formatted message such as a mail to an individual receiver are displayed together with the message type as a message list. Therefore, it can be determined from the message type whether each message is related to a business mail or a personal mail.

Further, according to the message management

method of the present invention, a receiver state list for displaying the states of a plurality of receivers of messages whose destinations are a plurality of receivers is displayed on a terminal.

5 The present invention can obtain the states of all the receivers who have received the messages asking, for example, whether or not they have confirmed the contents of messages or whether or not the businesses related to these messages have been
10 completed.

Brief Description of the Drawings

Fig. 1 is a block diagram showing a system configuration of the message processing system according to an embodiment of the present invention;
15

Fig. 2 shows configurations of a message file 15, a message management table 16, and a member table 17;

Fig. 3 is a flowchart showing the outline process of transmitting a message;

20 Fig. 4 is a table showing the display states at the time of transmitting a message;

Fig. 5 is a flowchart showing setting attributes based on the types of messages to be transmitted;

25 Fig. 6 is a flowchart showing displaying, returning, transferring, and transmitting processes

of existing messages;

Fig. 7 is a list showing received messages;

Fig. 8 is a flowchart showing the process of displaying a received message list;

5 Fig. 9 is a flowchart showing the process of displaying messages and a receiver state list 24 linked with each other;

Fig. 10 is a flowchart showing the process of setting date and time when a mail is opened;

10 Fig. 11 is a flowchart showing setting a comment;

Fig. 12 is a flowchart showing a completion check process;

Fig. 13 is a flowchart showing the process of calculating an open ratio;

15 Fig. 14 is a flowchart showing the process of calculating a completion check ratio;

Fig. 15 is a table showing a display state in which messages and a receiver state table are displayed linked with each other;

20 Fig. 16 is a flowchart showing amending a transmitted message and returning the thus-amended message in a not-opened state;

Fig. 17 is a received-message list 31;

25 Fig. 18 is a diagram showing a message edition screen;

Fig. 19 is a flowchart showing a process corresponding to the designation of an examiner and an approver;

Fig. 20 is a flowchart showing an examination process; Fig. 21 is a flowchart showing an approval process;

Fig. 22 is a flowchart showing the process of storing received messages as a to-do list;

Fig. 23 is a table showing a to-do list;

Fig. 24 is a table showing the data configuration of a message type/comment pattern table 32;

Fig. 25 is a flowchart showing the process of automatically setting the comment pattern corresponding to a message type at the time of transmitting a message;

Fig. 26 is a flowchart showing the process of automatically setting the comment pattern corresponding to a message type when receiving a message;

Fig. 27 is a screen for inputting a chosen comment;

Fig. 28 is a flowchart showing the process of extracting the contents of a comment to be shown as statistics;

Fig. 29 is a table showing the data structure of

a keyword table 33;

Fig. 30 is a table showing the data structure of an active keyword table 34;

Fig. 31 is a list for extracting keywords; and

5 Fig. 32 is a diagram explaining the case where a program is stored in a storage medium.

Description of the Preferred Embodiments

10 Embodiments of the present invention will be explained below with reference to the drawings. Fig. 1 is a block diagram showing the system configuration of a message processing system according to an embodiment of the present invention.

cms B1
15 ~~According to this message processing system, a plurality of terminals 11 are connected to a server 13 through a line network 12 such as a LAN or the like. A message processing program 14 of the server 13 has the functions of preparing and transmitting a message for the terminals 11, as well as a function of displaying the list of received messages, the list of messages to be transmitted, received messages, and the like. A message file 15 is a file in which the information on a message sender side is stored. The title of the message a sender ID, the contents of the~~
20 ~~message or the like are stored in the message file 15.~~
25

A message management table 16 is a table in which the information on a message receiver side is stored. A receiver ID, completion time and date, and comments to a message or the like are stored in the message management table 16. A member table 17 is a table for storing information about members who are destinations of messages. In this table, a member ID, names, a group which the members belong to or the like are stored.

Fig. 2 shows configurations of the message file 15, the message management table 16, and a member table 17, which are mentioned above.

Ins A8 ~~The message file 15 includes a region 15a for storing a message ID to be assigned to each message, a region 15b for storing a sender ID, a region 15c for storing transmission time and date, a region 15d for storing the due date of a response to the message, a region 15e for storing a message type such as a job request, a display operation or the like, a region 15f for storing information about whether or not the message is confidential, a region 15g for storing a title, and a region 15h for storing the contents of the message. Further, the message file 15 includes a region 15i for storing time and date when a message is updated, a region 15j for storing the ID of an~~

~~examiner who examines whether or not the message is~~
 approved, a region 15k for storing examined results,
 a region 15L for storing the ID of an approver who
 approves the message after this message is examined,
 5 a region 15m for storing the approved results, a
 region 15n for storing the information about whether
 or not the examined and approved message is readable,
 and a region 15p for storing a comment pattern which
 is specified by the sender. The message file 15
 10 further includes regions for storing attribute
 information such as the requirement for comments,
 important comment, urgent comment or the like, other
~~than the above mentioned regions.~~

~~The message type is the information indicating~~
 15 ~~which one of a job request, an investigation, a~~
 process of making all of a specific matter fully
 recognized, requirement for opinions or requests from
 the members, or the like, is the content of a message.
 According to the present embodiment, if a message type
 20 is selected by a sender when a message is prepared,
 an attribute such as the requirement for the comment
 to be included in a response, the requirement for a
 NO/YES answer or the like, is automatically set
 according to the thus-selected message type. In the
 25 ~~case where the investigation with a time limit, for~~

A
~~example, is selected as a message type, attributes of~~
 a "requirement for comments", and "with a time limit"
 are automatically set to the message. Accordingly, the
 sender does not need to set every attribute to each
 5 ~~of all the messages.~~

INS 140 B2
~~Next, the message management table 16 includes~~
 a region 16a for storing a message ID, a region 16b
 for storing a receiver ID, a region 16c for storing
 time and date when the message is opened, a region 16d
 10 for storing the completion time and date when the
 receiver opened the message and operated a definition
 button which will be described later, and a region 16e
 for storing comments to the message. The data stored
 in the message management table 16 are corresponded
 15 to the data stored in the message file 15 by the
~~message ID.~~

The member table 17 includes a region 17a for
 storing the member ID, a region 17b for storing a
 name, and a region 17c for storing a group to which
 20 the members belong. This member table 17 is used for
 looking for a member ID when the group to which the
 member belongs to and the name are designated.

Next, the operations of a message processing
 system having the above-mentioned configuration will
 25 be explained. Fig. 3 is a flowchart showing the

outline process of transmitting a message.

First, a sender inputs a user ID from the terminal 11 and logs on to the server device 13. When the sender performs operations for newly transmitting a message, a message processing program 14 of the server 13 displays a preparation screen for newly transmitting a message on the terminal 11 (S11 shown in Fig. 3).

Fig. 4 is a table showing the display state at the time of transmitting a message. Sections for inputting a destination, a message type, a title, a text or the like are displayed. On the right of the display screen, an enter button 21 and a clear button 22 are displayed. When a message is prepared and the enter button 21 is clicked, the message is transmitted, and the data which are inputted to the message file 15 are written in these sections. When the clear button 22 is clicked, the inputted data are cleared.

The sender of a message inputs the text of a message to be transmitted, and at the same time sets a destination, a message type, and the necessity or unnecessity of examination and approval. When the examination and approval are required, the sender sets the names of an examiner and an approver (S12). The

destination, the message type, and the like can be optionally selected from predetermined alternatives.

When the message type is inputted, the message processing program 14 of the server 13 sets attributes
5 corresponding to this message type (S13).

Ins A11 ~~When a box indicating "with examination and approval" is clicked, and the names of an examiner and an approver are set, a check box provided in the section of "with examination and approval" is
10 displayed black, and a process corresponding to the designation of the examiner and the approver is performed (S14).~~

Next, a sender ID, a message ID, a message type, a time limit, an examiner ID, an attribute
15 corresponding to a message type, information indicating that only the examiner, approver, and sender can read the message, and the like are inputted in the message file 15 (S15).

Ins A12 ~~Therefore, when a sender selects a job request
20 as a message type as shown in Fig. 4, a "requirement for comments" and "with a time limit" are automatically set as attributes. Since the check boxes provided in "a requirement for comments" and "with a time limit" section are displayed black as shown in
25 Fig. 4, the sender does not need to set every~~

~~attribute~~

When the "requirement for comments" is set as the attribute of a message, a state of the message receiver is not in a termination state until the sender inputs comments even if a message is opened on a receiver side, and the definition button is clicked. When a time limit is set, and this time limit expires without completing a business, the sender can recognize the presence of a message which should be urgently handled, since the number of days delay from the time limit is displayed on a received message list, which will be described later.

When a destination is designated by a sender, and the enter button 21 is clicked, a receiver ID is written corresponding to the message ID of the message management table 16. Further, that time is written in the region 15c for storing the transmission time and date of the message file 15, as a transmission time and date (S16).

Next, a process of setting attributes corresponding to the message type of step S13 shown in Fig. 3 will be explained with reference to the flowchart shown in Fig. 5.

First, it is determined whether or not a message type is a "message" (S21 shown in Fig. 5). When the

message type is the "message", the flow advances to step S22, and "capability of deleting a message by a receiver" is set as the attribute of the message.

5 When it is determined in step S21 that the message type is not a "message" (NO in step S21), the flow advances to step S23, and it is determined whether or not the message type is a "time limit check". If the message type is the "time limit check", the flow advances to step S24, and the "requirement
10 for comments" and "with a time limit" are set as attributes.

When it is determined in step S23 that the message type is not the "time limit check" (NO in step S23), the flow advances to step S25, and it is
15 determined whether or not the message type is a "job request". If the message type is the "job request", the flow advances to step S24, and the "requirement for comments" and "with a time limit" are set as attributes.

20 When it is determined in step S25 that the message type is not the "job request" (NO in step S25), the flow advances to step S26, and it is determined whether or not the message type is a "check with a filing time limit". If the message type is the
25 "check with a filing time limit", the flow advances

to step S24, and the "requirement for comments" and "with a time limit" are set as attributes.

When it is determined in step S26 that the message type is not the "check with a filing time limit" (NO in step S26), the flow advances to step S27, and it is determined whether or not the message type is a "YES/NO check". If the message type is the "YES/NO survey", the flow advances to step S28, and the "requirement for a YES/NO check" and "with a time limit" are set as attributes.

When it is determined in step S27 that the message type is not the "YES/NO check" (NO in step S27), the flow advances to step S29, and it is determined whether or not the message type is a "process of making all of a specific matter fully recognized". If the message type is the "process of making all of a specific matter fully recognized", the flow advances to step S30, and the "requirement for the automatic display of an agreement check" is set as an attribute.

Ins *A13* ~~When it is determined in step S29 that the message type is not the "process of making all of a specific matter fully recognized" (NO in step S29), the flow advances to step S31, and it is determined whether or not the message type is a "memorandum". If~~

A

~~the message type is the "memorandum", the flow~~
 advances to step S32, and "confidential" is set as an
 attribute. If the "memorandum" is set as a message
 type when preparing a message, this message designates
 5 the sender, and the attribute becomes confidential.
 Therefore, the sender can store this message to be
~~seen only by himself or herself.~~

When it is determined in step S31 that the
 message type is not the "memorandum" (No in step S31),
 10 the flow advances to step S33, and it is determined
 whether or not the message type is a "requirement for
 opinions". If the message type is the "requirement for
 opinions", the flow advances to step S34, and the
 "requirement for comments" is set as an attribute.

15 When it is determined in step S33 that the
 message type is not the "requirement for opinions",
 that is, the message type does not correspond to any
 one of the above-mentioned items, or the attribute
 according to the message type is set in the attribute
 20 section on the message preparation screen, attributes
 which are set in the attribute section are written in
 the corresponding region of the message file 13 (S35).

As mentioned above, an attribute for requesting
 a receiver to input comments, to answer YES or NO, or
 25 the like is set according to the message type. Then

the receiver performs operations according to this request. Thus, it can be confirmed whether or not the subject of the message is accurately informed to the receiver or whether the receiver approves or
5 disapproves of the message.

The displaying, returning, transferring, and the transmitting processes of the thus-transmitted message will be explained with reference to the flowchart shown in Fig. 6.

10 When the user of the terminal 11 performs the operations of displaying the received message, the message processing program 14 of the server 13 detects the message ID of the received message from the message management table 16 using the user ID. Then,
15 a list 20 of the received message as shown in Fig. 7 is displayed (S41 shown in Fig. 6).

Here, the contents of the process of displaying the received message list 20 in step S41 shown in Fig. 6 will be explained with reference to the flowchart
20 shown in Fig. 8.

First, the member ID of a user, who is logged on to the terminal 11 to which a request of displaying the message list has been made, is set as a receiver ID (Fig. 8, S51). Next, the message management table
25 16 is detected using the receiver ID as a key, and a

corresponding message ID is extracted (S52). Then, the message type, the state, the title of each message and the like are obtained from the message file 15 based on the thus-extracted message ID (S53). The
5 information about each of the thus-obtained items is edited to be displayed on a corresponding terminal 11 as the received message list 20 (S54).

Before opening a message, the receiver can determine from the received message list 20 shown in
10 Fig. 7, which kind of message the received message is, that is, a job request, a time limit check, a process of making all of a specific matter fully recognized, a personal mail, or the like. Further, the receiver can determine whether or not the message is an urgent
15 message, an important message or the like, from the attribute information.

Both a formatted message such as a business work flow, and a non-formatted message such as a personal mail, can be displayed on the received message list
20 20 together with the message type. Therefore, the receiver can simultaneously manage all the received messages.

Further, the receiver can determine whether or not a not-opened message or a message of which a time
25 limit has expired is present. Further, the receiver

can also determine the answer states, how many members have completed their businesses, and what the completion ratio is, from the completion states of the messages. If a time limit expires in an unfinished state, a flame mark or a receiver's angry face, etc. which is not shown in Fig. 7, is displayed, and this mark or face gradually becomes larger as the number of days delay from the time limit increases, thereby informing the receiver of the degree of delay.

10 In the case where the receiver wishes to read a message as shown in Fig. 6, he or she clicks the title of a message of the received message list 20, which the receiver wishes to open (S42). When instructed to open the message, the message processing program 14
15 of the server 13 reads out the contents of the designated message from the message file 15, and displays the thus-read-out message on the screen of the terminal 11 (S43). Further, a receiver state list 24 indicating the completion state of the receiver of
20 the message, comments, and the like are displayed on the terminal 11 linked with the message (S44).

A process of displaying a received message and the receiver state list 24 linked with each other will be explained with reference to the flowcharts shown
25 in Figs. 9 to 14 and the display states shown in Fig.

15.

First, the message type, the title, the transmission date, the message contents, and the sender ID of each message are obtained based on the message ID of the received message list 20 (S61 shown in Fig. 9). Then, a process of setting the time and date when a message is opened, which is shown in step S62, is performed.

The process of setting the time and date when a message is opened will be explained with reference to Fig. 10. First, it is determined whether or not a message is opened according to a fact that whether or not the time and date has been stored in the region 16c, of the message management table 16, for storing the time and date when a message was opened (S81 shown in Fig. 10). In the case where the message has been opened, the process terminates at this point. In the case where the message is not opened, the current time and date are obtained since the message is opened for the first time (S82). Then, the thus-obtained time and date are set as the open time and date, in the open time and data section of the display and edition region of a message (S83).

Next, a process of setting comments in step S63 shown in Fig. 9 is performed.

This process of setting comments will be explained below with reference to Fig. 11. The message management table 16 is detected using the message ID and the receiver ID. Then, it is determined whether
5 or not comments are stored in a storage region 16e for storing the comment, corresponding to the message ID and the receiver ID (S91 shown in Fig. 11). In the case where comments are not stored, the process terminates at this point. In the case where comments
10 are stored in the region 16e of the message management table 16, these comments are set in a comment input section on the screen (S92).

Thus, in the case where the receiver has already set comments in a message, the thus-set comments are
15 displayed in the comment input section of the message.

Then, a completion check process in step S64 shown in Fig. 9 is performed.

This completion check process will be explained
20 with reference to Fig. 12. First, it is determined whether or not a completion check is designated, that is, whether or not a receiver has already operated the definition button 23 after confirming the contents of a message (S101 shown in Fig. 12). In the case where
25 the completion check is not designated, that is, the

receiver has not performed operations for the completion, the process terminates at this point. In the case where the completion check is designated, on the other hand, a completion operation is set in the completion check section on the screen (S102).

A process of calculating an open ratio in step S65 shown in Fig. 9 is performed.

The process of calculating an open ratio will be explained with reference to the flowchart shown in Fig. 13. First, data of all the receivers corresponding to the designated message ID are obtained from the message management table 16 (S111 shown in Fig. 13). Next, the number of receivers whose open time and date are set in the message management table 16 is calculated (S112). Then, the number K of receivers who opened the messages is divided by the number of all the receivers so that the open ratio is obtained by multiplying the resultant number by [100] (S113).

Next, a process of calculating a completion check ratio is performed in step S66 shown in Fig. 9.

This process of calculating a completion check ratio will be explained with reference to the flowchart shown in Fig. 14. First, data of all the receivers corresponding to the designated message ID

are obtained from the message management table 16 (S121 shown in Fig. 14). Next, the number of receivers whose completion dates are set is calculated (S122). Then, the number C of receivers who have completed
5 their businesses is divided by the number of all the receivers so that the completion check ratio is obtained by multiplying the resultant number by [100] (S123).

In step S67 shown in Fig. 9, the message type,
10 the transmission time and date, the title, the contents of a message, the sender's name, the open ratio, and the completion check ratio which are obtained according to the above-mentioned processes are transferred to the display and edit region for
15 storing display data at the time of editing a message. Then, the data stored in the display and edit region are displayed as a message display screen (S68).

Next, a receiver ID is obtained by referring to the message management table 16 according to the
20 message ID of the selected message (S69). In this process, the message management table 16 is detected using the message ID as a key so that the corresponding receiver ID is obtained.

Next, the open time and data, the completion time
25 and data, and comments which are stored corresponding

to the receiver ID are obtained (S70). In this case, data in which the open time and data, and the completion time and data have not been stored, are handled as not-opened and not-completed data. Further, a name corresponding to the receiver ID is obtained by referring to the member table 17 using a receiver ID as a key. Accordingly, the thus-obtained name is set as a receiver's name (S71).

Ins A14 ~~The receiver's name, the open time and data, the completion time and data, and comments which are obtained by the above-mentioned processes are transferred to the display and edit region (S72). It is determined whether or not processes terminate for all the receivers who are stored in the message management table 16, corresponding to the message ID (S73). In the case where processes do not terminate for all the receivers, the process returns in step S69, and the above-mentioned processes repeat. In the case where processes terminate for all the receivers, on the other hand, the contents of the display and edit region are displayed as the receiver state list 24 (S74).~~

According to the above-mentioned processes, a received message and the receiver state list 24 are displayed linked with each other. After the process

returns to processes shown in Fig. 6, the receiver closes the message by operating one of the definition button 23, a return button 26, and an existing-message-transmission button 27, shown in Fig. 15, while the message and the receiver state list 24 are being displayed (S45).

In the case where the definition button 23 is operated, the process advances to step S46, and the current time and data are written in the region 16d for storing completion time and data in the message management table 16. If comments are inputted, the thus-inputted comments are written in the storage region 16e for storing a comment.

In the case where the return button 25 is operated, the process advances to step S47, and a return process is performed for newly preparing a message which designates a sender of the message as a destination.

Ans A15 ~~In the case where the transfer button 26 is~~
 20 ~~operated, the process advances to step S48, and a~~
~~transfer process is performed for transferring the~~
~~received message to another person as it is. Further,~~
~~in the case where the existing-message-transmission~~
~~button 27 is operated, the process advances to step~~
 25 ~~S49, and an existing message-transmission process is~~

~~performed for newly preparing a message using the text
of the received message.~~

Fig. 15 shows tables indicating the display states when a message and the receiver state list 24 are displayed linked with each other according to the above-mentioned processes.

Ans A16 ~~When the title of a specific message is clicked,~~
while the received message list 20 is being displayed,
the message type, the title, the contents of the
10 message, and the like are displayed. If this is the
first opening, the current time and date are stored
in the region 16c for storing time and date when the
message management table 16 is opened. After the
contents of the message are confirmed, the receiver
15 performs an YES/NO check, inputs comments, or the like
according to the message type. After that, when the
definition button 23 is operated, the comments which
are inputted to a comment section are written in the
storage region 16e for storing the comment of the
20 message management table 16, and the time and date
when the definition button 23 is operated are written
in the storage region 16d for storing completion time
and date, as completion time and date. In the case
where the "requirement for comments" or the
25 ~~"requirement for an YES/NO check" is set as an~~

A

~~attribute of the message at this time, a process is~~
 not handled as completed even if the definition button
 23 is operated without inputting comments or
 performing the YES/NO check. Consequently, the
 5 completion time and data are not written in the
~~message management table 16~~

According to this embodiment, when a message is
 displayed, a sender of the message and all receivers
 thereof can observe the states of the receivers of the
 10 message, that is, whether or not each receiver opens
 the message, whether or not each receiver confirms the
 message, whether or not a completion state is obtained
 by completing the matter described in the message, or
 what kind of comments each receiver makes on the
 15 message. Therefore, for example, in the case of a
 message for confirming the progress of the business
 of a member of a group, the states of all the members
 can be determined by looking at the message, the
 completion state in a receiver state list, comments
 20 and the like. Accordingly, the leader of the group can
 determine the states of all the members without
 reading the respective messages transmitted from the
 members. Since a member can determine the states of
 the other members, members can share information
 25 similarly to the case where all the members get

together and report their states to each other. Therefore, the present invention can provide a virtual electronic space for performing a series of operations such as instructions and prosecutions of the business, reports on the states thereof, or the like.

Next, processes of amending a transmitted message and returning the amended message in a not-opened state will be explained with reference to the flowchart shown in Fig. 16.

When operations for displaying the list of messages to be transmitted is performed by a user, the message processing program 14 of the server 13 detects the message of a sender ID which corresponds to the user ID inputted from the terminal 11, from the message file 15. Then, this program displays a transmission message list 31 including a message type, a completion state, a title, transmission time and date, a time limit, an amendment button 32, and a deletion button 33 as shown in Fig. 17 (S131 as shown in Fig. 16). In a state section 31a of the transmission message list 31, the number of receivers who transmit completion responses among the receivers of messages, and the completion ratio are displayed.

The sender looks at this list and clicks the title of a message to be updated or the amendment

button 32 (S132).

The message processing program 14 determines whether or not the amendment button 32 is operated (S133). In the case where the amendment button 32 is operated, data of a message which is designated by the message file 15 are read out, and a message edition screen shown in Fig. 18 is displayed (S134). On this message edition screen, the message type, the title, the text, the sender's name, the attributes, the examination and approval, the destination to be deleted, and the destination to be added, which are read out from the message file 15 are displayed.

The sender changes a message type, a title, a text, an attribute, a completion state section, and a destination if necessary (S135). After the sender amends the necessary data, and he or she clicks an update button 34 while he or she keeps a check button for determining whether or not data should be returned in the not-opened state in a completion state section, in a check state (shown as a black box in Fig. 18), or in a not-checked state (S136). When the thus-amended data are transmitted as a new message, a new transmission button 35 is clicked. When the message is deleted, a delete button 36 is clicked.

The message processing program 14 determines

whether or not a message is returned in a not-opened state, according to a fact about whether or not a check box for returning in a not-opened state is checked (S137).

5 ~~In the case where the message is returned in a~~
Ans A17 not-opened state, the open time and date, and the
 completion time and date of the corresponding message
 ID of the message management table 16 are cleared
 (S138). Next, the current time and date are obtained
 10 (S139) to be written in a region 15i for storing the
 update time and date of the message file 15 (S140).
 Further, the amended data are written in the
 corresponding storage region of the message file 15
 (S141). In the case where the message is returned in
 15 a not-opened state, since the comments which the
 receiver wrote are kept as they are, response
 operations terminate after operating the definition
 button 23 if the receiver displays the amended
 message, confirms the contents, and needs not change
 20 ~~the comments.~~

For example, when such an amendment requires the
 addition or deletion of a destination, and the sender
 sets a check box for returning a message in a not-
 opened state, in a not-checked state, the flow
 25 advances from step S137 to step S139. At this time,

the update time and date are written in the message file 15 without clearing the completion time and date.

In the case where it is determined in step S133 that the amendment button 32 is not clicked, that is, a title is clicked, the flow advances to step S142, and the designated message and receiver states are displayed linked with each other. When the title section of a message is further clicked displaying the message, the screen changes to a screen for editing a message (S143), and the processes in and after S134 are performed.

FNS A18 ~~Thus, in the case where data of the transmitted message are changed, the message can be returned in the not-opened state. Accordingly, when a message is amended, it is not necessary to prepare a new message again to be transmitted, so that the operations for preparing a message can be reduced. In the case where the amended message requires comments, and the comments to the amended message need not to be changed, the receiver neither prepares a new response message nor inputs comments to the received message, since the comments which were previously prepared are stored as they are. Therefore, the operations for a message response are reduced.~~

Next, the contents of a process corresponding to

the designation of a sender and an approver, which is shown in step S14 shown in Fig. 3, are explained with reference to the flowchart shown in Fig. 19.

5 First, it is determined whether or not the designation of the examination and approval is present on a message transmission screen (S151 shown in Fig. 19). If YES, it is determined whether or not the designation of an examiner is performed (S152). In the case where the examiner is designated, it is further
10 determined whether or not the approver is designated (S153).

In the case the examiner is not designated, the flow advances to step S154, and it is determined whether or not the designation of the approver is
15 performed. When the approver is designated, the error display of an examiner designation is performed (S155). When the approver is not designated, the error display of an approver designation is performed in step S155. When the sender designates an examiner or
20 an approver (S156), the flow returns in step S151.

In the case where an examiner and an approver are designated (YES in steps S152 and S153), an ID of the designated examiner is written in a region 15j for
storing the examiner ID of the message file 15 (S157).

25 Next, an ID of the designated approver is written

in a region 15L for storing the approver ID of the message file 15 (S158).

Further, in order that the other users cannot read this message until the examination and approval are completed, data such that only the examiner and approver can read this message are written in a region 15n for storing the data indicating whether or not the message file 15 is readable.

Next, the examination and approval processes will be explained with reference to Figs. 20 and 21. At the time of log-on, if there is a message to be examined and approved by a user who logs on to a server, a message to be examined and approved is specified in a received message list which has not been checked. Accordingly, the examiner clicks the corresponding title. When the title is clicked, the message processing program 14 detects a received message ID of the message management table 16 according to the user ID of the examiner which is inputted from the terminal 11. Further, this program 14 determines whether or not the designated message obtained by detecting the message file 15 according to the message ID is a message which requires the examination and approval. In the case where the received message requires the examination and approval, it is

determined whether or not the examiner ID corresponds to the user ID, which are set in the message file 15. If these IDs correspond to each other, this message is displayed in step S161 shown in Fig. 20 .

5 The examiner confirms the contents of the displayed message, and inputs "pending", "examined", or "deletion" in the examination and approval section of the message (S162). The message processing program 14 writes the examination results which are inputted
10 to the examination and approval section, in a region 15k for storing the examination results of the message file 15 (S163).

 Similarly to the above-mentioned examination, when the approver clicks the title of a message which
15 requires the approval of a received message list 20 which has not been checked, the message processing program 14 detects the message file 15 according to the message ID of the designated message, and determines whether or not the designated message
20 requires the examination and approval. If the received message requires the examination and approval, the message processing program 14 determines whether or not the approver ID which is set in the message file 15 corresponds to the user ID which is inputted from
25 the terminal 11. If the IDs correspond to each other,

this message is displayed in step S171 shown in Fig. 21.

Further, the message processing program 14 determines whether or not the message is examined, that is, whether or not data are written in a region 15k of the message file 15 for storing the examination results corresponding to the message ID (S172). In the case where no data are written, the process terminates at this point. When data are written in, it is determined whether or not the examination results have been examined (S173).

When a message has been examined, the approver confirms the contents of the message and inputs "pending", "examined", or "rejection" (S174).

Then, the message processing program 14 writes this inputted "pending", "examined", or "rejection" in a region 15m for storing examination results of the message file 15 (S175). Further, this message processing program 14 determines whether or not the approved results are actually "approved" (S176). If the result is "approved", the message processing program 14 writes information indicating that the message is readable, in a region 15n for storing whether or not a message is readable, and makes this message readable (S177).

Next, a process of storing a received message as a to-do list will be explained with reference to Fig. 22.

First, the received message list 20 is displayed (S181 shown in Fig. 22). If the receiver clicks the title of a specific message regarding this list (S182), the contents of this message are displayed (S183). Further, a receiver state list 22 is displayed (S184). After the receiver operates one of a definition button, a return button, a transfer button, and an existing-message-transmission button (S185), it is determined which one of the transfer button 21 (S186), an existing-message-transmission button 25 (S187), or other buttons is the thus-operated button. In the case where the thus-operated button is the transfer button 24, the original sender's name as well as the original transmission time and date are added to the text, and further a transfer operation is added to the title (S188). At the process after step S188 or after the existing-message-transmission button 25 is operated (S187), a new transmission screen is displayed, and the contents of the original received message are set (S189). The above-mentioned process is basically the same as that performed from step S41 to step S49 shown in Fig. 6.

The receiver changes the message type or the like on screen if necessary (S190). For example, the receiver sets a memorandum as the message type of an existing message to be transferred or to be used.

5 The message processing program 14 determines whether or not the message type is a memorandum. If the message type is a memorandum, its attribute is made to be confidential, and the destination is made to be a user ID (S192).

10 Fig. 23 is a table showing the display screen of a to-do list. A memorandum is displayed as a message type, a transfer operation is displayed in a title section, and the transmission date and the sender of an original message are displayed in a text section.

15 In this case, the message type is a memorandum and the destination is the user thereof. Therefore, it is displayed in the receiver state list 22 that the user is the only receiver.

20 If the process returns to those processes shown in Fig. 22, and the execution button 21 is operated, the contents of a new transmission screen are written in each region of the message file 15 (S193). Further, the destination is written in the receiver ID of the message management table 16 (S194).

25 According to these processes, when the completion

schedule of business or the like is reported in a message response, the response message can be stored as a confidential message by making the message type a memorandum. Thus, it can be confirmed whether or not
5 a matter is promised the completion date of business is present, according to a memorandum.

Below is the explanation of the embodiment in which a receiver can automatically set the type of a comment to be answered on a receiver's side, when
10 preparing a message.

In this embodiment, a message type/comment pattern table 32 as shown in Fig. 24 is provided. This table 32 stores a comment pattern and the contents of the comment pattern (comment alternative which will
15 be described later) corresponding to a message type. In the section of the contents of the comment pattern shown in Fig. 24, a comment alternative to which a "reason" is added is an extension requiring the reason why the comment alternative is selected. When the
20 receiver selects "refusal" or "pending" as a comment, it is necessary to input the reason.

In Fig. 24, only one kind of comment pattern is displayed for a single message type. However, a plurality of comment patterns are stored for a single
25 message type, and they are displayed when a message

type is designated, so that a sender can select an arbitrary comment pattern among them.

5 A text, a destination or the like are first inputted on the preparation screen of a new message (S201 shown in Fig. 25), and a message type is set (S202).

10 The message processing program 14 detects the message type/comment pattern table 32 according to the thus-inputted message type (S203). It is determined whether or not the corresponding comment pattern is present (S204). When a comment pattern is present, this comment pattern is obtained (S205). Further, its attribute is displayed in an attribute section, and the thus-obtained comment is displayed in a comment section (which is newly prepared on the message transmission screen shown in Fig. 4) (S206). When the sender completes the preparation of a message and operates the execution button 21, the comment pattern displayed in a comment section is written in a region 15p for storing a comment pattern of the corresponding message of the message file 15 (S207).
15
20

25 According to this embodiment, when the sender designates a message type, a comment pattern corresponding to this message type is automatically selected. Then, the comment pattern and the contents

of the comment pattern, for example, a comment alternative such as "approval", "rejection", "pending", or the like are displayed in the message comment section on a receiver side. Consequently, the receiver
5 can prepare comments by selecting one of such comment alternatives. Thus, since the receiver prepares comments by selecting a specific comment alternative from a plurality of comments alternatives which are designated by the sender, comments can be obtained
10 from the receiver based on the sender's intention.

Next, a process of automatically setting comments at the time of receiving a message will be explained with reference to Fig. 26.

When the receiver clicks the title of the
15 received message list 20 to designates the message to be opened, the message type, the comment pattern, the title, the context, the comment alternative of the designated message, and the like are read out from the message file 15, thereby displaying these on the
20 screen of the terminal 11 (S211 shown in Fig. 26).

When a comment pattern is set in a region 15p for storing the comment pattern of the corresponding message of the message file 15, the contents of a further-set comment pattern, that is, a comment
25 alternative, are read out from the message

type/comment pattern table 32, so that the comment pattern and the comment alternative are displayed in the comment section (S212).

When the receiver clicks one of the displayed comment alternatives to selects a response comment (S213), the message processing program 14 determines whether or not an extension (for example, an extension requiring a comment to be added) is added (S214). In the case where an extension is added, the contents of the extension are displayed in the comment section on a message display screen (S215). The receiver inputs comments corresponding to the contents of the displayed extension (S216).

For example, when a comment alternative such as "approval", "rejection (reason)", "pending (reason)", "others ()", "consultation request ()", or the like is displayed in the comment section of the input screen of a comment alternative as shown in Fig. 27, if the check box of each comment alternative is clicked, the thus-clicked check box becomes checked, and the corresponding comment is selected as a response comment. If this comment is one which is set by an extension (shown as (reason) in Fig. 27), a word such as "reason" is displayed in the comment section, and the reason why this comment alternative was

selected is required.

If the process returns to Fig. 26, the input of comments terminates, and the definition button 23 is operated, the message processing program 14 writes the
5 comments which are inputted to the comment section, in a storage region 16e for the comment corresponding to the receiver ID of the message management table 16.

Thus, in the case where a comment pattern is set by a sender, a comment alternative corresponding to
10 the thus-set comment pattern is displayed. Therefore, a receiver can easily prepare a comment which is suitable for the answer required by the sender, only by selecting the comment among comment alternatives.

Next, an extraction statistic process of
15 extracting keywords from the contents of the receiver's comments and obtaining the occupation ratio of each keyword will be explained with reference to the flowchart shown in Fig. 28.

First, the designated message and the receiver
20 state list 24 are displayed linked with each other (Fig. 28, S221). Then, it is determined whether or not a detection operation is performed using a keyword table 33 shown in Fig. 29 (S222). When the detection operation is performed using the keyword table 33, the
25 process advances to step S223, and the contents of the

keyword tables 33 are displayed on the terminal 11. The sender selects the name of an optimum keyword from the keyword table 33 taking the contents of the comments into consideration (S224). The keyword
5 corresponding to the thus-selected keyword name of the keyword table 33 is set in an active keyword table 34 shown in Fig. 30 (S225).

If the keyword table 33 is not used (NO in step S222), a user selects the necessary words from the
10 comment section of the receiver state list 24 (S226).

The message processing program 14 sets the words which are selected by the user in the active keyword table 34 (S227). Then, it is determined whether or not the input operation of words to be set as keywords
15 terminates (S228).

If the selected keywords of the keyword table 33 are set in the active keyword table 34, or the input operation of the keywords, which is performed by the user, terminates, keywords are sequentially retrieved
20 from the active keyword table 34. Next, the comment section of the receiver state list 24 is detected so that the number of keywords which correspond to each other is counted (S229). Then, the thus-counted number is set as the number corresponding to the keywords of
25 the active keyword table 34 (S230). Next, it is

checked whether or not keywords which are not aggregated in the active keyword table 34 are present, and it is determined whether or not all the keywords have been already aggregated (S231). If all the
5 keywords are aggregated in the active keyword table 34, a keyword extraction list 35 shown in Fig. 31 is prepared to be displayed following the receiver state list 24 (S232).

According to the extraction statistic of the
10 contents of a comment, it can be obtained how many users approve or dispute the contents of the messages, how many users reserve their decisions, or the like from the receivers' comments to the messages. Further, each ratio thereof can be obtained.

15 Fig. 32 is a diagram explaining the case where the above-mentioned message processing program 14 is first stored in a portable storage medium 44 such as a CD-ROM, a floppy disk or the like, or a storage apparatus which a program provider has, and then this
20 program is loaded to a processor 41 to be executed.

In the case where this program is stored in the portable storage medium 44 such as a CD-ROM, a floppy disk or the like, the portable storage medium 44 is inserted to a drive apparatus 42, thereby reading out
25 this program. Then, the thus-read-out program is

stored in a memory 43 such as a RAM, a hard disk or the like, thereby executing this program. In the case where a program is provided from a program provider thorough a communication line, the program which is
5 stored in a storage apparatus, a memory of the program provider, or the like is received in the processor 41 through the communication line. Then, the thus-received program is stored in the memory 43 such as a RAM, a hard disk or the like to be executed. A
10 program to be stored in the storage medium can include a part of the function of the above-mentioned message processing program 14. For example, a program for managing the receiver state list 24 and a program for displaying the receiver state list 24 on the terminal
15 11 are respectively stored in different storage media, so that the respective programs can be executed by a message processing equipment or a terminal.

According to the above-mentioned embodiment, the message file 15, the message management table 16, and
20 the like are stored in the storage apparatus of the server 13. By contrast, a storage apparatus for storing a message can be provided independently from the server 13, and the server 13 can write a message in the storage apparatus or can read out a message
25 from the storage apparatus, through a communication

line.

According to the present invention, since a message and a receiver state list indicating the states of a receiver of this message are displayed
5 linked with each other, the sender of a message or all the receivers can determine simultaneously the states of all the receivers of the messages, for example, whether or not each receiver approves the message or whether or not his or her business is completed,
10 together with the contents of the message. Since information indicating whether or not the message has been opened, whether or not the message has been confirmed, and completion information indicating whether or not the receiver's business has been
15 completed, are displayed as a receiver state list, the completion states of all the receivers can be determined simultaneously. Further, since a formatted message like a work flow related to the business and a not-formatted message for an individual receiver are
20 displayed in a list together with the respective message types, messages with different objectives can be referred to on the same display screen together with their message types. Further, since a sender sets keywords, and performs a statistical process by
25 extracting keywords from the receiver's comments, he

